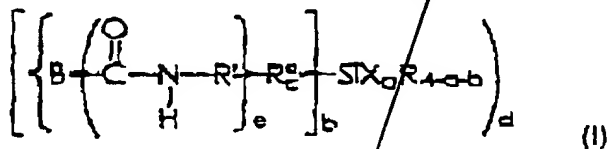


PATENT CLAIMS

1. A hydrolyzable and polymerizable organically modified silane of the general formula I



in which the radicals and indices have the following meaning:

B = straight-chain or branched organic radical having 2 to 50 carbon atoms and at least one C=C double bond, the -CO-NH- group being bonded to a carbon atom of the radical B, and B containing no norbornene, bicyclo[2.2.2]oct-2-ene or 7-oxabicyclo[2.2.1]hept-2-ene group;

R = optionally substituted alkyl, alkenyl, aryl, alkylaryl or arylalkyl, each having 1 to 15 carbon atoms, it being possible for these radicals to contain oxygen and/or sulfur and/or nitrogen atoms;

R° = optionally substituted alkylene, alkenylene, arylene, alkylenearylene or arylenealkylene, each having 1 to 15 carbon atoms, it being possible for these radicals to contain oxygen and/or sulfur and/or nitrogen atoms;

R' = optionally substituted alkylene, alkenylene, arylene, alkylenearylene or arylenealkylene, each having 1 to 15 carbon atoms, it being possible for

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these radicals to contain oxygen and/or sulfur and/or nitrogen atoms;

X = hydrogen, halogen, hydroxyl, alkoxy, acyloxy, alkylcarbonyl, alkoxycarbonyl or NR''_2 , where R'' is hydrogen, alkyl or aryl;

a = 1, 2 or 3;

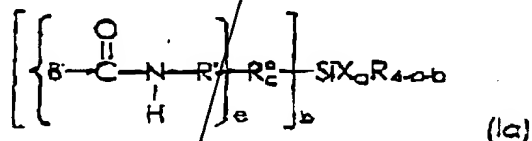
b = 1, 2 or 3, and $a+b = 2, 3$ or 4;

c = 0 or 1;

d = 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10;

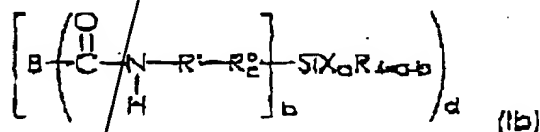
e = 1, 2, 3 or 4, where $e = 1$ when $c = 0$.

2. The silane as claimed in claim 1, which has the general formula Ia



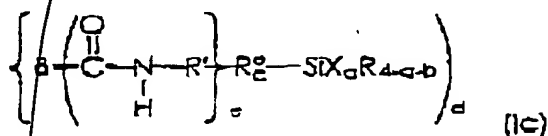
in which the radicals and indices are as defined in claim 1.

3. The silane as claimed in claim 1, which has the general formula Ib



in which the radicals and indices are as defined in claim 1.

4. The silane as claimed in claim 1, which has the general formula Ic



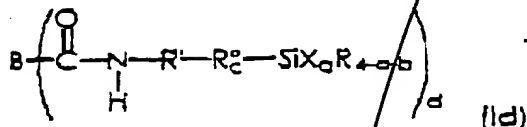
in which the radicals and indices are as defined in

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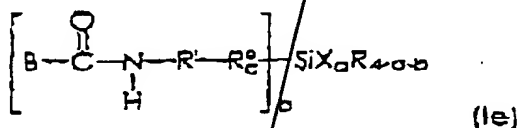
claim 1.

5. The silane as claimed in claim 1, which has the general formula Id



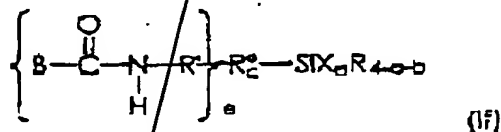
in which the radicals and indices are as defined in claim 1.

6. The silane as claimed in claim 1, which has the general formula Ie



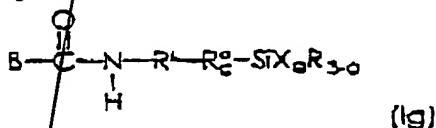
in which the radicals and indices are as defined in claim 1.

7. The silane as claimed in claim 1, which has the general formula If



in which the radicals and indices are as defined in claim 1.

8. The silane as claimed in claim 1, which has the general formula Ig



in which the radicals and indices are as defined in claim 1.

9. The silane as claimed in any of claims 1 to 8, wherein, in the general formula I, Ia, Ib, Ic, Id, Ie,

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If or Ig, the radicals and indices have the following meaning:

X = (C₁-C₄)-alkoxy, preferably methoxy or ethoxy, or halogen, preferably Cl;

R = (C₁-C₄)-alkyl, preferably methyl and ethyl;

R' = (C₁-C₄)-alkylene, preferably methylene, ethylene and propylene;

B, R^o, a, b, c, d and e are as defined in claim 1.

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10. The silane as claimed in one or more of claims 1 to 9, wherein B in the general formula I, Ia, Ib, Ic, Id, Ie, If or Ig is a substituted or unsubstituted organic radical having one or more acrylate and/or methacrylate groups.

11. The silane as claimed in claim 10, wherein the radical B is derived from acrylates and/or from methacrylates of trimethylolpropane, of glycerol, of pentaerythritol, of dipentaerythritol, of C₂-C₄-alkanediols, of polyethylene glycols, of polypropylene glycols or of optionally substituted and/or alkoxylated bisphenol A.

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12. A process for the preparation of the silanes as claimed in one or more of claims 1 to 11, wherein b x e moles of a compound B(COOH)_d are reacted with d moles of a compound [{OCN-R'}_eR^o]_bSiX_aR_{4-a-b} under decarboxylating conditions, the radicals and indices being as defined in claim 1.

13. The use of a silane as claimed in claim 1 for the preparation of organically modified silica

$$\left[\left[B - \left(\overset{\text{O}}{\parallel} \text{C} - \underset{\text{H}}{\text{N}} - R \right) \right]_e - R'_c - \text{Si} \left(R'_a \right)_3 - R'_b \right]_d \quad (1)$$

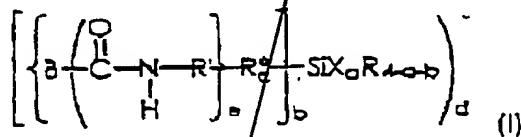
14. The use as claimed in claim 13, wherein compounds capable of free radical and/or ionic and/or covalent nucleophilic polymerization are used, optionally in precondensed form, as further hydrolytically condensable compounds.

15. The use as claimed in claim 13 or 14, wherein one or more initiators are added to the polycondensate and wherein the polycondensate is cured thermally and/or photochemically and/or by redox initiation.

16. The use as claimed in one or more of claims 13 to 15, wherein one or more components capable of free radical and/or ionic and/or covalent nucleophilic

polymerization are added to the polycondensate before the curing.

17. The use of the silane as claimed in claim 1 for the preparation of polymers by free radical and/or ionic and/or covalent nucleophilic polymerization of one or more compounds containing C=C double bonds and optionally other compounds capable of free radical and/or ionic and/or covalent nucleophilic polymerization, by redox initiation and/or by the action of heat and/or of electromagnetic radiation and optionally in the presence of one or more initiators and/or of a solvent, wherein from 1 to 100 mol %, based on monomeric compounds, are selected from silanes of the formula I



in which the radicals and indices are as defined in claim 1.

18. The use as claimed in claim 17, wherein one or more spiroorthoesters, spiroorthocarbonates, bicyclic spiroorthoesters, methacryloylspiroorthoesters or mono- or oligoepoxides are used as cationically polymerizable compounds.

19. The use as claimed in claim 17 or 18, wherein the polymer is hydrolytically condensed, optionally in the presence of further hydrolytically condensable compounds of silicon and optionally other elements from the group consisting of B, Al, P, Sn, Pb, the

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transition metals, the lanthanides and the actinides, and/or precondensates derived from the abovementioned compounds, by the action of water or moisture, optionally in the presence of a catalyst and/or of a solvent.

20. The use of the silanes as claimed in one or more of claims 1 to 11 for the preparation of polycondensates, of heteropolycondensates, of polymers, of bulk materials, of composites, of adhesives, of casting and sealing compounds, of coating materials, of coatings, of abrasives, of adhesion promoters, of binders, of fillers, of fibers, of films, of (contact) lenses and of dental restoration materials.

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